

margin; median, transverse lamina absent at base of first gastral tergum; two rows of woolly hair present on either side at base of first tergum, this tergum making up $\frac{1}{2}$ dorsal length of gaster; tips of ovipositor sheaths projecting slightly past end of gaster.

Male.—Length 1.0-1.25 mm. Antennae, vertex, posterior margin of pronotum, tegulae, coxae, and femora faintly metallic blue, otherwise black.

Type locality.—Norfolk, Va.

Types.—U. S. N. M. no. 64496.

Described from 7 female and 2 male specimens, as follows: Holotype ♀, Norfolk, Va., 1926, reared from *Phytomyza ilicicola* Loew, F. W. Poos; allotype ♂ and 1 ♀, 1 ♂ paratypes, Pittsburgh, Pa., South Park, Aug. 11-18, 1939, G. E. Wallace; 1 ♀ paratype, Patuxent Refuge, Md., Aug. 31, 1953, H. Owens; 1 ♀ paratype, Waco, Texas, July 6, 1949, P. A. Glick; 1 ♀ paratype, Waco, Texas, July 13, 1949, on cotton, W. B. Lattimore; 1 ♀ paratype, Brownsville, Texas, July 21, 1945, on cotton; 1 ♀ paratype, Wellston, Ohio, May 25, 1953, W. E. Miller. One ♂ and 1 ♀ paratypes deposited in the Carnegie Museum, Pittsburgh, Pa.; the other specimens are in the U. S. National Museum.

A NEW SPECIES OF NOMADOPSIS AND NOTES ON SOME PREVIOUSLY DESCRIBED ONES

(HYMENOPTERA, ANDRENIDAE)

JEROME G. ROZEN, JR., *Department of Zoology and Entomology, Ohio State
University, Columbus*

This paper is based upon collections generously loaned by the California Insect Survey, University of California, Berkeley [CIS], Cornell University [CU], Snow Entomological Museum, University of Kansas [KU], U. S. National Museum [NM], and University of Idaho [UI]. Only records that alter previously existing concepts of the distribution of a species or that greatly extend the known range of a species are listed. Unless indicated otherwise, citations of previous work refer to my revisionary study of the genus (Rozen, 1958).

Nomadopsis (Nomadopsis) puellae (Cockerell)

1 male, Murphy, Owyhee Co., Ida., VI-16-57 (W. F. Barr). 2 males, same except 13 mi. S.E. of Murphy, V-27-58 [All UI]

After the revision of the genus was completed, the distribution of *puellae* north of southern Nevada still remained in doubt. However, the above records suggest that the species inhabits most of the Great Basin region. Accordingly *puellae* will probably be collected in southern Oregon and western Nevada.

Nomadopsis (Macronomadopsis) barri Rozen, new species

(Figs. 1, 4)

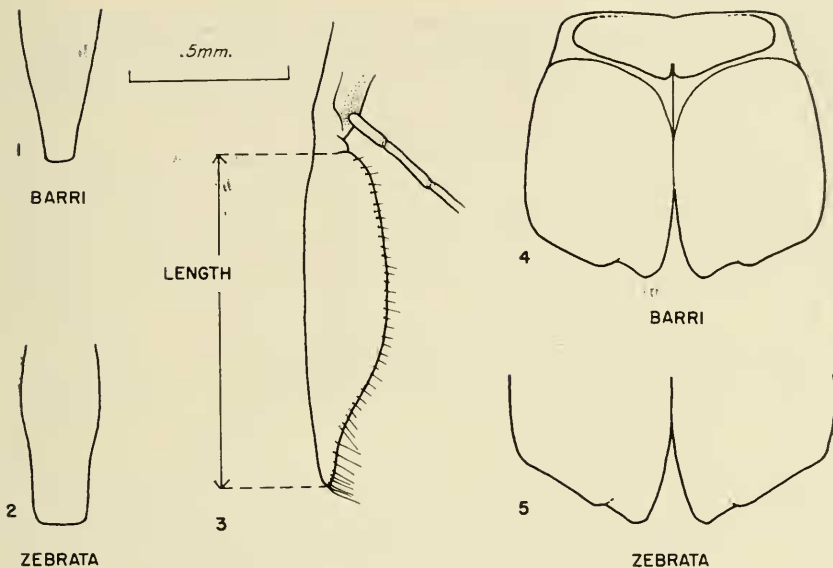
Both the males and females of this species run to *zebrata* in the key to species of *Nomadopsis*. They differ from those of *zebrata* by their smaller size, lower vertex, and shorter clypeus, as described below. In *barri* the mouthparts relative to head size are shorter than those of *zebrata*, whereas the length of eye relative to head size is greater in *barri*. A comparison of the length of the galea as measured in figure 3 with the maximum length of the eye reveals that the galea is approximately one-half the length of the eye in *barri* and at least two-thirds in *zebrata*. However, the yellow genal maculation posterior of the mandibular condyle is the easiest means of recognizing the males of *barri*. The only diagnostic feature of the male genitalia is the posterior margins of the gonocoxites.

Male.—Length approximately 8.5 mm.

Head: As described for *zebrata* (Rozen, 1958) except for following. Clypeal length shorter than in *zebrata* but longer than in *micheneri*; clypeal protuberance about same as in *micheneri* and less than in *zebrata*; supra-clypeal area approximately one-half as long as broad; vertex extending even less above upper margins of eyes than in *zebrata*, approximately as in *micheneri*; gena, unlike in other *Nomadopsis*, with yellow maculation immediately behind mandibular condyle. Antennal scape light except for elongate dark maculation on dorsal surface; pedicel light below.

Mesosoma: As described for *zebrata* except for following. Pronotum with lateral angles and lateral lobes light. Mesoscutum with anterior part having punctures between one-half and one puncture width apart, somewhat sparser than in *zebrata*; posteromedial part with punctures about two to three puncture-widths apart; integumental sculpturing absent; color entirely dark except in two specimens, one having two longitudinal paramedian yellow stripes about one half mm. long, the other (the holotype) with two inconspicuous paramedian elongate flecks of yellow mesad of tegulae. Tegulae opaque yellow at base, transparent brown to light brown at apex. Mesoscutellum of one specimen (the holotype) with conspicuous yellow flecks on discal area. Fore legs with coxa and usually trochanter bearing light maculations; femur light apically, maculation extending at least nearly to base on anterior, ventral and part of posterior surfaces; femur light; tarsus light. Middle legs with coxa and trochanter usually bearing small light maculations; femur light apically, with light maculation actually or nearly reaching base of segment on anterodorsal surface; tibia light except sometimes for small diffused dark maculation on posteroventral surface; tarsus light, becoming tawny toward apex. Hind legs with coxa and trochanter bearing small light maculation; femur light apically, with light maculation extending nearly to base of ventral surface; tarsus light, becoming tawny toward apex.

Metasoma: As described for *zebrata* except for following. Metasomal terga 1-6 with light bands uniform in width, moderately broad (more so than in *micheneri* and slightly more so than in *zebrata zebrata*) and but slightly narrowing medially; first, fifth, and sixth bands occasionally very shallowly excavated from behind by sublateral dark spots; seventh metasomal tergum with diffused



EXPLANATION OF FIGURES

Genus *Nomadopsis*. Fig. 1: *N. barri*, pygidial plate, posterior view. Fig. 2: *N. zebrata*, same. Fig. 3: Galea, lateral view, depicting method of measuring length. Fig. 4: *N. barri*, gonocoxites of male, dorsal view. Fig. 5: *N. zebrata*, posterior margin of gonocoxites of male, dorsal view. Scale refers to figures 1, 2, 4, and 5.

median light maculation anterior to pygidial plate. Pygidial plate (fig. 1) usually somewhat narrower at apex than in *zebrata* (fig. 2) and with sides more divergent anteriorly. Sterna and genitalia as illustrated for *zebrata* (Rozen, 1958, figs. 114-8) except median part of posterior margin of gonocoxites not as greatly produced posteriorly (figs. 4, 5).

Female.—Length 9 mm.

Head: As described for *zebrata* (Rozen, 1958) except for following. Clypeal length shorter than in *zebrata*, same as in *micheneri*; color light except for two elongate dark maculations extending part way from supraelypeal area toward labrum; compared with that of male, each paraoocular area with light maculation reduced from above; subantennal areas light; supraelypeal area light and measured at greatest distances three-fifths as long as broad; vertex produced even less above upper margins of eyes than in *zebrata* and *micheneri*. Antennal scape dark except for small diffused light maculation at base.

Mesosoma: As described for *zebrata* except for following. Pronotum with lateral angles light and with small light fleck on each lateral lobe. Tegulae each with small opaque light spot at base and translucent brown at apex. Fore legs with femur bearing small apical light maculation; tibia with anterior and dorsal surfaces light, becoming tawny toward apex; tarsus tawny. Middle legs with femur bearing very small apical light maculations; tibia with dorsal surface light except for extreme apex; tarsus dark except for elongate light maculation on

anterior surface of basitarsus. Hind legs with femur bearing small apical light maculation; basitibial plate dark; tibia with anterior surface light at least at base; rest of segment covered with pollen; tarsus dark except for diffused light maculation on anterior surface of basitarsus. Wings with humeral plate mostly light.

Metasoma: As described for *zebrata* except for following. Metasomal bands 1-4 uniform in width, moderately broad (more so than in *micheneri* and *anthidia*), and but slightly narrowing medially (less so than in *zebrata zebrata*, *micheneri*, and *anthidia*); bands not excavated from behind by sublateral dark spots; fifth metasomal tergum with band broader than preceding and shallowly excavated from behind by sublateral dark spots; median part of band notched anteriorly.

Type Material.—Holotype male, allotype, four male paratypes: Rexburg, Ida., VII-17-56, alt. 4861 ft. *Melilotus* (W. F. Barr).

The holotype and allotype have been returned to the University of Idaho. This species is named in honor of William F. Barr, the collector of the type series.

Discussion and Distribution.—This species appears so similar to *zebrata* that its specific status might be questioned. However, in view of the characters presented in the diagnosis and of the fact that no intermediates are known, these two forms must be considered distinct species, though in all probability recently evolved from a common ancestor.

The distribution of *barri* is allopatric with that of *zebrata*. *N. barri* is known only by the type series and a single male bearing the following data: Sisters, Crook Co. [now Deschutes Co.], Ore., VII-1909 (J. C. Bridwell) [NM]. This specimen agrees in all salient features with those of the type series except the light markings on the scape, gena, and legs are somewhat reduced, the sublateral dark spots on the scape, gena, and legs are somewhat reduced, the sublateral dark spots on the abdomen are slightly more pronounced and the posterior femora bear elongate dark maculations on the middle of the anterior surfaces.

Flower Data.—The fact that all specimens of the type series, including the pollen bearing female, were taken on *Melilotus* suggests that the subgenus as a whole feeds upon legume pollen.

Nomadopsis (Macronomadopsis) anthidia (Fowler)

In a recent letter, P. H. Timberlake points out that in all probability Fowler named this species *Calliopsis anthidius* because of the color pattern resemblance to the bees in the genus *Anthidium*. Consequently, "*anthidius*" must be regarded as a declinable adjective. Therefore, the name now should be *anthidia*, in agreement with the feminine generic name, and not *anthidius*, as cited in the revision and in Michener (1951).

Nomadopsis (Micronomadopsis) phaceliae Timberlake

1 male, 5 mi. S. Lancaster, Los Angeles Co., Calif., IV-II-58 (J. W. MacSwain). 3 males, Apple Valley, San Bernardino Co., Calif.,

V-8-58, *Nama demissum* (P. D. Hurd). 1 male same except *Euphorbia albomarginata*. [All CIS]

These records reflect a wider distribution for *phaeciae* than predicted in the revision and suggest that the species range encompasses at least the Mojave Desert.

Nomadopsis (Micronomadopsis) meliloti (Cockerell)

2 males, Willcox, Cochise Co., Ariz., VIII-18-58 (P. D. Hurd), [CIS]

The first collection of the species both from Arizona and from west of the Continental Divide, this record indicates that *meliloti* extends west into the desert regions of Arizona, Mexico, and possibly California and Baja California.

Nomadopsis (Micronomadopsis) callosa Timberlake

I have now examined the type of this species [CU] and find that the specimens treated in the revision are virtually identical to it.

Nomadopsis (Micronomadopsis) australior (Cockerell)

13 females, Villa Ahumada, Chih., Mex., VI-28-47, D. Rockefeller Exp., *Lepidium alyssoides* most with pollen on legs. (C. D. Michener) [KU]

Although the species was predicted to occur in Mexico, this record is the first for that country.

REFERENCES CITED

- Michener, C. D., 1951. In Muesebeck, *et al.* Hymenoptera of America North of Mexico. U. S. Dept., Agric., Monogr. no. 2, 1420 pp., map.
 Rozen, J. G., 1958. Monographic study of the genus *Nomadopsis* Ashmead (Hymenoptera: Andrenidae). Univ. Calif. Pubs. Ent. 15:1-202, 218 figs., 17 maps.

A NEW PERMIAN INSECT HORIZON

Many members of the fauna of the Oklahoma Wellington Formation from the Mideo insect bed are well-known. Dr. Paul Taseh of the University of Wichita reports discovery of a new horizon, several feet stratigraphically above the bed that yielded the insects described by Dr. F. M. Carpenter of Harvard University. The new horizon, Taseh reports, was traceable in Kay county, Oklahoma (which is immediately north of Noble County where the above insect bed was located) and in Sumner County, Kansas. Geological details will be published elsewhere. Here, I wish to indicate that the following orders of insects have been recognized in the fossils from this new horizon: Protoperlaria, Ephemeroptera, Protodonata, Megaseoptera, Protorthoptera, and Ephemeroptera. A wing with a piece of the abdomen is readily placed in Protozygoptera of Odonata.—J. R. ZIMMERMAN, *Indiana Central College, Indianapolis.*